

**PATENT COOPERATION TREATY**  
**PCT**  
**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**  
(Chapter II of the Patent Cooperation Treaty)  
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 3/2	<b>FOR FURTHER ACTION</b>		See Form PCT/IPEA/416	
International application No. PCT/IB2004/001232	International filing date (day/month/year) 23.04.2004		Priority date (day/month/year) 24.04.2003	
International Patent Classification (IPC) or national classification and IPC E03D9/04				
Applicant MATTIELLO, Ruggero				
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> (<i>sent to the applicant and to the International Bureau</i>) a total of 7 sheets, as follows:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</li> <li><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</li> </ul> <p>b. <input type="checkbox"/> (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s)), containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>				
<p>4. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Box No. I Basis of the opinion</li> <li><input type="checkbox"/> Box No. II Priority</li> <li><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li> <li><input type="checkbox"/> Box No. IV Lack of unity of invention</li> <li><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li><input type="checkbox"/> Box No. VI Certain documents cited</li> <li><input type="checkbox"/> Box No. VII Certain defects in the international application</li> <li><input checked="" type="checkbox"/> Box No. VIII Certain observations on the international application</li> </ul>				
Date of submission of the demand  19.11.2004	Date of completion of this report  14.07.2005			
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer  Leher, V Telephone No. +49 89 2399-7352			
				

## **INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**

International application No.  
PCT/IB2004/001232

**Box No. I Basis of the report**

- With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
  - This report is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:
    - international search (under Rules 12.3 and 23.1(b))
    - publication of the international application (under Rule 12.4)
    - international preliminary examination (under Rules 55.2 and/or 55.3)
- With regard to the **elements\*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

**Description, Pages**

**1, 3-11** as originally filed  
**2, 2a, 2b** received on 21.02.2005 with letter of 21.02.2005

## **Claims, Numbers**

1-14 received on 21.02.2005 with letter of 21.02.2005

## **Drawings, Sheets**

14-44 as originally filed

a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3.  The amendments have resulted in the cancellation of:  
 the description, pages  
 the claims, Nos.  
 the drawings, sheets/figs  
 the sequence listing (*specify*):  
 any table(s) related to sequence listing (*specify*):

4.  This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).  
 the description, pages  
 the claims, Nos.  
 the drawings, sheets/figs  
 the sequence listing (*specify*):  
 any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/IB2004/001232

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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**1. Statement**

Novelty (N)	Yes:	Claims	1-14
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-14
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-14
	No:	Claims	

**2. Citations and explanations (Rule 70.7):**

**see separate sheet**

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**Box No. VIII Certain observations on the international application**

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The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

**see separate sheet**

**INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(SEPARATE SHEET)**

International application No.

PCT/IB2004/001232

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

Reference is made to the following documents:

- D1: JP-A-2003096874
- D2: BE-A-1008428
- D3: DE-U-20008281
- D4: WO00/77312
- D5: FR-A-2067610

The document D1 is regarded as being the closest prior art to the subject-matter of *claim 1*, and shows (the references in parentheses applying to this document):

Aspirating apparatus for toilets which comprises aspirating means 10 *comprising an aspirator with an inlet and an outlet* connected operationally in the inlet to *formed* aspirating ducts 8a-d provided in the walls of a toilet bowl 3 of the aspirating apparatus for use in bathrooms and toilets the aspirating ducts leading into the cavity 4 inside defined by said walls near to the deposition area of urine and faeces in said cavity 4 in order to allow aspiration of the smells emitted by said urine and faeces next to the deposition area and in the outlet 13 connectable operationally to a different place than the room housing said toilet bowl 4.

The subject-matter of *claim 1* differs from this known aspirating apparatus in that

- . the inlet of the aspirator is operationally connected to the outlet pipe of a flush box of the toilet bowl, whereby said outlet pipe leads in the ring duct for the washing water distribution in said cavity of said bowl,
- . said ducts being provided int the front wall and side walls of said bowl, and being connected to the ends of the back portion of said ring duct,
- . and in that the ducts are equipped with a plurality of aspirating openings along the curved portion, the openings communicating with said cavity.

The subject-matter of *claim 1* is therefore new (Article 33(2) PCT).

The problem to be solved by the present invention may be regarded as keeping the aspirating apparatus clean in a simple manner, in order to ensure effective aspiration close to the place of deposition.

The solution to this problem proposed in *claim 1* of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons:

**INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(SEPARATE SHEET)**

International application No.

PCT/IB2004/001232

None of the documents show ducts which have openings close to the place of deposition, whereby these ducts and openings are cleaned at each flushing operation.

Claims 2-14 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

**Re Item VIII**

**Certain observations on the international application**

**Claim 1, Lack of Clarity, Article 6 PCT**

The application does not meet the requirements of Article 6 PCT, because claim 1 is partly not comprehensible and therefore not clear. In view of the original description, in particular page 7, lines 22 - page 8, line 3 it is suggested to formulate claim 1 as follows (the reference signs missing):

*Aspirating apparatus particularly for toilets comprising aspirating means comprising an aspirator with an inlet and an outlet, the inlet being operationally connected to formed aspirating ducts provided in the walls of a toilet bowl of the aspirating apparatus for use in bathrooms and toilets, the aspirating ducts leading into the cavity inside defined by said walls near to the deposition area of urine and faeces in said cavity in order to allow aspiration of the smells emitted by said urine and faeces next to the deposition area, the outlet of the aspirator intended to be connected operationally to a different place than the room housing said toilet bowl,*

***characterised in that***

*the inlet of the aspirator is operationally connected to the outlet pipe of a flush box of the aspirating apparatus, whereby said outlet pipe leads in a ring duct for the washing water distribution in said cavity of said bowl;*

*said aspirating ducts are provided in the front wall and side walls of said bowl and are connected to the ends of the back portion of said ring duct, said ducts along the curved portion being equipped with a plurality of aspirating openings communicating with said cavity and turning towards the outfall area of said bowl where urine and faeces deposit.*

tendency, motivated by lack of useful space and by cost restraining, to realize houses groups having blind bathrooms or toilets. In this kind of toilets the air change obviously results fundamental. The aspirator outlet has to be connected to a chimney vent flue which has to be planned during the construction of the building and thus representing realization costs as well as restraints for the houses groups layout.

A second example of aspirating apparatus for toilets is constituted by traditional aspirating means connected by means of a piping, being rigid in the first section and elastic in the end section, to the posterior part of an ring duct obtained in the seat of a toilet bowl. Said duct along its development is provided with a plurality of openings flowing out on the lower part of the seat in the direction of the bowl cavity. The apparatus is activated by a microswitch placed near to the seat which according to the horizontal/vertical seat position activates or deactivates the aspirating means. The main inconvenience recognized in this solution consists in the fact that the aspirating action is exercised in a position rather distant from the deposition area for urine and faeces which are the origin of the bad smells. A second inconvenience is recognized in the very laborious cleaning of the openings. A third inconvenience is recognized in the fact that the apparatus is deactivated when the toilet bowl is used for urine deposition as the seat is in vertical position.

A third example of aspirating apparatus is disclosed in JP-A-2003096874. It comprises a deodorizing pipe connecting the back wall of

a bowl for water closet to a drain pipe for human waste in order to transfer the smells from the bowl to the drain pipe, a deodorizing fan installed along this deodorizing pipe between said drain pipe and said bowl in order to aspirate smells from said bowl and send it to the drain pipe, a check valve located along the deodorizing pipe upstream the deodorizing fan in order to allow the transfer of the smells only from the bowl to the drain pipe. The main drawback of this solution consists in that the deodorizing pipe leads to the back wall of the bowl where the faeces go down towards the deposition area so that the opening of the deodorizing pipe tends to 5 obstruction. This drawback is made worse by the fact that the washing water doesn't wash the inner surface deodorizing pipe.

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A fourth example of aspirating apparatus is disclosed in BE-A-1008428. It comprises a deodorizing pipe connecting a bowl for water closet to a chimney pipe in order to transfer the smells from the bowl outside and a deodorizing fan installed along this deodorizing pipe in order 15 to aspirate smells from said bowl and send it to the chimney pipe. In particular, the deodorizing pipe defines in the bowl a circular duct equipped with a plurality of aspirating openings all around the bowl turning towards the cavity of the bowl and 40 cm distant from the surface of the water inside said cavity. A first drawback of this solution consists in that the aspirating openings are far from the deposit area of the urine and the faeces so that the aspirating action isn't particularly efficacious. A second 20 drawback consists in that the aspirating openings on the back wall of the

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No. Rif.: 3/2



bowl where the faeces go down towards the deposition area tend to obstruction. This drawback is made worse by the fact that the washing water doesn't wash the inner surface deodorizing pipe.

The aim of the present invention is to provide an aspirating apparatus particularly for toilets which solves the problems evidenced in

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## CLAIMS

1. Aspirating apparatus particularly for toilets comprising aspirating means (11) with an inlet and an outlet, the inlet being operationally connected to aspirating ducts (131, 231) provided in the walls of a toilet bowl (14, 114, 214, 314) of the aspirating apparatus for use in bathrooms and toilets, the aspirating ducts leading into the cavity inside (135, 233) defined by said walls near to the deposition area of urine and faeces in said cavity (135, 233) in order to allow aspiration of the smells emitted by said urine and faeces next to the deposition area, the outlet of the aspirating means intended to be connected operationally to a different place than the room housing said toilet bowl (14, 114, 214, 314), said aspirating means comprising an aspirator (11) with an inlet and an outlet, the inlet being operationally connected to the outlet pipe (12) of flush box (13) of a toilet bowl (14), said outlet pipe leading in the ring duct (233) for the washing water distribution in said cavity (233) of said bowl (214), and the outlet of the aspirator intended to be connected operationally to a place outside the room housing said toilet bowl (14), characterized in that said aspirating ducts are formed by formed ducts (131, 231), obtained in the front wall and side walls of said bowl (214), connected to the ends (232) of the back portion of said ring duct (233) for the washing water distribution in said cavity (233) of said bowl (214), said ducts (131, 231) along the curved portion being equipped with a plurality of aspirating openings (234) communicating with said cavity (233) and turning towards

the outfall area (235) of said bowl (214) where urines and faeces deposit.

2. Aspirating apparatus, according to claim 1, characterized in that said aspirating ducts are formed by one or more ducts (131) departing from the back wall of said bowl (114) where they are connected by means of 5 pipings 132 to said aspirating means; said couple of ducts (131) extending along the lateral walls of said bowl until approximately the area before the outfall (133) of said bowl (114), as the final portion of said couple of ducts (131) is provided with a plurality of aspirating openings (134) communicating with said cavity (135) and turning towards said outfall area (133) where 10 urines and faeces deposit.

3. Aspirating apparatus, according to the foregoing claim, characterized in that it comprises an antibackflow valve (15) placed downstream said aspirator (11).

4. Aspirating apparatus, according to one or more of the foregoing 15 claims, characterized in that said aspirator (11) is operationally connected in the outlet to the part of the outfall sewer conduit (16) of said toilet bowl (14) placed downstream the siphon (17) of same toilet bowl (14), said system (10) comprises flow interception means (18) disposed between said part of the outfall sewer conduit (16) of said toilet bowl (14) and the 20 outlet pipe (12) of flush box (13).

5. Aspirating apparatus, according to the foregoing claim, characterized in that said flow interception means (18) comprises a float check-valve (19) placed upstream said aspirator (11).

6. Aspirating apparatus, according to one or more of the foregoing claims, characterized in that it comprises a flow gauge (22) placed downstream, or upstream, said aspirator (11); said flow gauge (22) is operationally connected to the aspirator (11).
- 5 7. Aspirating apparatus, according to claims 5 and 6, characterized in that said float check-valve (19) comprises a vibrator, associated with said flow gauge (22), to release the float ball when it is blocked in its proper seat.
- 10 8. Aspirating apparatus, according to claim 4, characterized in that said flow interception means (18) comprises a motor-driven three-way valve placed upstream said aspirator (11).
- 15 9. Aspirating apparatus, according to one or more of the foregoing claims, characterized in that said flow interception means (18) comprises a motor-driven valve for the bidirectional flow blocking (20) placed downstream said aspirator (11).
- 10 10. Aspirating apparatus, according to one or more of the foregoing claims, characterized in that it comprises a flow display placed downstream, or upstream, said aspirator (11); said flow display is operationally connected to said aspirator (11).
- 20 11. Aspirating apparatus, according to one or more of the foregoing claims, characterized in that it comprises a presence sensor (23) for an user being next to said toilet bowl (14).
12. Aspirating apparatus, according to the foregoing claim, characterized

in that said presence sensor (23) is composed of a photocell operationally connected to a time switch and to the control of said aspirator (11).

13. Aspirating apparatus, according to claim 4, characterized in that said flow interception means (18) comprises an antibackflow valve (15) placed downstream said aspirator (11).

14. Aspirating apparatus, according to one or more of the foregoing claims, characterized in that said aspirating means are connected by means of a piping (331) to the exhalation valve (332) of said bowl (314).

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